UNIT 6

Shop Cleanup and Organization

OBJECTIVE

To work cooperatively with classmates to clean the shop efficiently and to store all tools and materials properly.

Competencies to be developed

After studying this unit, you should be able to:

- Use shop-cleaning equipment properly.
- Clean benches, machines, and floors.
- Store materials properly.
- Store tools properly.
- Do assigned tasks.
- Work cooperatively with others.

MATERIALS LIST

- Bench brush
- Floor broom
- Dust mop
- Vacuum cleaner
- Rag can
- Scrap wood box
- Scrap metal can
- Shop cleanup wheel chart
- Shop cleanup assignment sheet

TERMS TO KNOW

- silhouettes
- flammable materials cabinets
- vertical racks
- floor brooms
- dust mops
- bench brushes
- scoop shovels
- dust pans
- cleanup wheel
- cleanup skills checklist
- cleanup assignment sheet

A CLEAN AND ORDERLY SHOP

Each student should have a clear vision of what is meant by a clean and orderly shop. All students working under the direction of the teacher should help produce and maintain a clean and orderly shop. Some positive indicators of a properly cleaned shop are as follows:

- A signal is given to stop work and start cleanup at a specified time. A whistle is effective as a cleanup signal.
- Every student helps with cleanup.
- Benches are cleared and clean.
- Machines are clean.
- Paint brushes and spray equipment are properly cleaned and stored.
- Solvents, paints, and greases are properly stored.
- Tools are in their places.
- Lumber, metal, and other construction materials are stored.
- Projects and related materials are in approved places.
- Floor is clean and trash is in containers.
- Cabinets and storage areas are locked.
- Every job is checked for completeness.
- Every student is evaluated according to the quality of his or her cleanup contribution.
- Sinks and restrooms are clean and orderly.
- Students are waiting in an orderly manner for dismissal by the teacher.

REASONS FOR KEEPING THE SHOP CLEAN

A quick and efficient cleanup procedure is important to the safety of students. It adds greatly to the success of an agricultural mechanics shop program. There are good reasons for cleaning the shop after each class, every day. Some of these are related to personal safety, some to learning efficiency, and some to student comfort and convenience. A properly organized shop cleanup procedure is important for the following reasons:

- Each student's projects and possessions are stored properly. When projects are stored properly, they do not interfere with the work of other students and are not damaged by other students using the shop. Projects or project parts may be stored in drawers, lockers, storage cabinets, storage rooms, or fenced areas. In well-managed shops, project parts may be stored in containers by, on, or under large projects such as tractors, wagons, or machinery.
- All project parts are stored together. This enables students to see if any items need to be brought the next day to continue the project.
- Shop spaces are cleared, so other classes can safely use the areas.
- Tools are returned to their proper places. Tools should be mounted on panels over colored outlines of each tool (Figure 6-1). These outlines are called **silhouettes**; they make it easy to check for missing tools at the end of each class. Tools can also be easily checked to see if they are in need of repair.
- Each student learns to put tools and materials in their proper places and can expect to find them quickly when needed. This eliminates lost time looking for tools and materials.
- Paint materials and equipment are cleaned and stored to avoid wasted materials and ruined finishing materials.
- The hazards of fire and explosion are reduced by proper storage of materials.
- Students learn cooperation and teamwork.

Figure 6-1 Tools should be mounted on panels in an orderly manner. Note how the use of silhouettes makes it easy to see when tools are missing. *(Courtesy of Mark Morgan)*

EQUIPMENT AND CONTAINERS USEFUL FOR SHOP CLEANUP

It is important to have enough cleanup equipment and materials on hand so all students can participate in cleaning and storage activities. Each student must do his or her part to make the cleanup easier for everyone. It is also important to have storage containers or racks for every type of materials used in the shop, (Figure 6-2). Many shops have excellent commercial **flammable materials cabinets**. Flammable liquids, such as grease, oil, and solvents, are stored in these cabinets, which are made of steel and close automatically in the presence of fire (Figure 6-3). Such cabinets must meet all safety requirements.

Racks for lumber and metal provide safe and convenient storage for these materials (Figure 6-4). **Vertical racks** permit the storage of both long and short items.

Figure 6-2 Storage racks and containers are needed for different types of materials. *(Courtesy of Gary Farmer)*

Figure 6-3 Flammable liquids such as grease, oil, and solvents, must be stored in special cabinets that close automatically if a fire occurs. *(Courtesy of Eagle Manufacturing Company)*

On such racks, materials can be reached with little moving of other items.

There are many items of equipment that are necessary to clean a shop quickly and efficiently and to store materials safely. These items include the following:

- **floor brooms**
- floor **dust mops**
- **bench brushes**
- shop vacuum cleaner(s)
- dust collection and chip removal system
- metal cans for rag storage
- large metal trash cans
- storage cabinets for combustible materials
- **scoop shovels** and **dust pans** to pick up dirt and trash
- Varsol for cleaning up grease and oil spills
- sawdust to absorb liquids
- commercial material to sprinkle on the floor to control dust

Figure 6-4 Racks for lumber, steel rods, structure steel, and pipe make good use of wall space.

- clean rags
- storage cabinets for tools and hardware
- storage racks for lumber and metal
- steel cans for metal used for practice welding
- suitable containers for scrap wood
- cabinets, lockers, fenced areas, and the like, for project storage.

The soft-bristled brush and shop vacuum cleaner are the standard tools for removing dirt, sawdust, and trash from benches and machines (Figure 6-5). The floor broom and dust mop are important floor-cleaning equipment. The dust pan and standard scoop shovels are commonly used to move the trash from the floor to the trash can.

Figure 6-5 The shop vacuum cleaner makes cleanup easier and does not stir up dust. *(Courtesy of Gary Farmer)*

DUST COLLECTION SYSTEMS

Many shops are equipped with dust collection systems. These systems consist of a large centrally located vacuum with ducts running to various machines and areas in the shop. As a machine creates dust (such as sawdust or sanding dust), the dust is pulled from around the machine and transported to a collection bin. Also, vents may be located in the floor for collecting dust swept from the floor. These systems have to be properly maintained by cleaning the ducts, making

sure they are not clogged, and emptying the storage bin periodically.

TECHNIQUES FOR EFFECTIVE CLEANING

Effective cleaning skills cannot be taken for granted; they must be developed. Many students go through the motions of cleaning, but many do not do a good job. Shop cleanup tasks include:

- removing tools and materials from benches and floor before cleaning
- cleaning all paint brushes
- cleaning high areas such as racks, machines, and bench tops
- cleaning the shop, starting at its far sides and ends and working toward the trash collecting area(s)
- using brushes and brooms in short strokes and lifting intermittently (brushes and brooms should be tapped against the surface or floor frequently to shake out dirt particles)
- using a commercial dust-absorbing material, if available
- using a vacuum cleaner to clean machines whenever possible (the vacuum cleaner is very desirable because it does not create dust)
- putting oily rags in closed metal containers
- using sawdust or commercial materials to absorb liquids such as oil spills
- sweeping fine waste particles into floor drops of dust collection systems, if provided
- putting all trash in suitable metal containers
- placing trash containers in the proper place
- storing all cleanup equipment properly
- cleaning all sink areas and picking up paper towels
- helping others finish the cleanup.

SHOP CLEANUP SYSTEMS

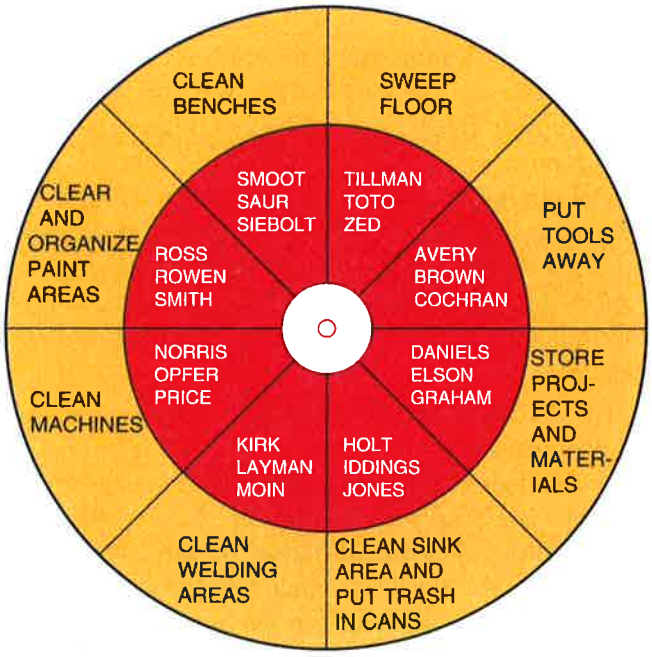
Organization is the key to a clean shop. Without good organization, students who see the need for a clean and orderly shop soon lose their willingness to put the shop in good order. This is natural since the value of teamwork and fair play is learned at a very young age. Therefore, a system that involves every student on an equal basis is needed. Several systems have been developed to get the job done.

ALL-PITCH-IN METHOD

For lack of a better term, the most simple system of shop cleanup is called the "all-pitch-in" method. With this system, the teacher announces cleaning time verbally, or by whistle, bell, or other device. Students start by putting their own materials away. They then do cleanup, arrangement, or storage tasks according to their knowledge, maturity, personal cleanup habits, and commitment to the program. This system generally fails because students lack the knowledge and skills necessary to do a good job at all cleanup tasks. Students and teacher soon discover that certain important cleanup tasks are left undone. This is due to lack of organization.

CLEANUP WHEEL METHOD

Many shops use a cleanup wheel (Figure 6-6). This system uses a chart shaped like a wheel. The teacher



NOTE:
1. ALL SECTIONS IN THE WHEEL ARE OF EQUAL SIZE (ALL SPOKES ARE EQUAL DISTANCE AROUND THE WHEEL)
2. THE HUB AND INNER RING WITH STUDENTS' NAMES WILL ROTATE TO CHANGE ASSIGNMENTS
3. THE OUTER SECTION OF THE WHEEL DOES NOT ROTATE

Figure 6-6 A shop cleanup wheel chart. All sections in the wheel are of equal size. To change assignments, the teacher rotates the inner circle containing the students' names. The outer ring of the wheel does not rotate.

SHOP CLEANUP SKILLS CHECKLIST

Key:
3 = Done well
2 = Done satisfactorily
1 = Done poorly
0 = Job not done
ab = Student is absent

DATE 4/4

SHOP FOREPERSON Walker

NAME	DATE AND RATING										AVERAGE SCORE	COMMENTS
	3/5	3/6	3/7	3/8	3/9	3/12	3/13	3/14	3/15	3/16		
Avery	3	3	2	3	3	3	3	3	3	3	2.9	
Saur	3	2	1	1	1	ab	0	0	1	1	1.0	
Cochran	1	3	0	3	3	3	3	3	3	3	2.5	
Opfer	ab	3	3	2	2	2	2	2	3	2	2.1	
Walker (Foreperson)	JW	JW	JW	JW	JW	JW	JW	JW	JW	JW		

Figure 6-7 A shop cleanup skills checklist. In this example, the teacher has initialed the box by the foreperson's name, indicating that the teacher observed the general conditions of the shop and approved the job done by the foreperson.

specifies all cleanup tasks in equal sections on the outer section of the wheel chart. Students are placed in groups or given a group number. Either names or group numbers are placed in the inner section of the wheel chart. Each group of students is assigned the task or tasks listed in line with their name or group number on the wheel chart. The tasks remain stationary at the edge of the chart. The wheel itself can be periodically rotated so each group has a chance to do all cleanup tasks.

For the cleanup-wheel method to work, some kind of **cleanup skills checklist** is needed. It is important that a student who is respected by his or her classmates and is a good judge of achievement be given this job. A checklist with a format that works well is shown in Figure 6-7. The checklist should be placed in a prominent location so students can see how they are being evaluated. Students with zeroes (0) and ones (1) should be encouraged to improve their cleanup skills.

When using a checklist, the foreperson's name is listed along with all others. During the shop cleanup time, the foreperson carries the checklist on a clipboard and evaluates all students except himself or herself. The teacher then evaluates how well the foreperson has done the evaluations.

This method helps students see how well they are developing their cleanup skills. It also helps develop management and supervisory skills. The checklist has only enough columns for a limited number of shop periods. New cleanup tasks should be assigned to students every two weeks. This ensures that everyone will do all jobs sometime during the year and learn how to do each one in a skillful manner.

Both the teacher and the students must realize that the shop cleanup skills are valuable. Future employment demands such skills be developed. Therefore, every effort should be made to teach and learn procedures and tasks used in effective cleanup operations.

ASSIGNMENT SHEET METHOD

The assignment sheet method may be used in place of the cleanup wheel and the shop cleanup skills checklist, (Figure 6-8). One important advantage of the assignment sheet is that as many students as necessary can be assigned to any given task to get it done. The equal-sized groups necessary for the cleanup wheel are not needed for the assignment sheet. A disadvantage of assignment sheets is the time required to periodically reassign students.

With the shop **cleanup assignment sheet**, the teacher and class develop a list of cleanup tasks. Class

SHOP CLEANUP ASSIGNMENT SHEET

Key:
3 = Done well
2 = Done satisfactorily
1 = Done poorly
0 = Job not done
ab = Student is absent

DATE _____

SHOP FOREPERSON _____

Task	Person(s) Responsible	Date and Rating								Average Score	Comments
	Date:										
Sweep benches	Avery										
	Saur										
	Opfer										
Clean welding areas	Elson										
	Graham										
	Holt										
Sweep floor	Iddings										
	Jones										
	Kirk										
Foreperson	Mozier										

Figure 6-8 A shop cleanup assignment sheet. This sheet resembles a shop cleanup skills checklist except that it includes a task column.

members are then assigned to these tasks in numbers needed to get the job done. For instance, if it takes two people to sweep off benches, four to clean the welding areas, and five to sweep the floor, the appropriate number of students can be assigned to each task. The teacher decides who will do the tasks although students can volunteer for various tasks. Assignments may be changed as often as desired. A new shop cleanup assignment sheet must be prepared each time a rotation is made.

A student foreperson and the check-off system are used to evaluate cleanup skills. The check-off, or evaluation, process is the same as described for the shop cleanup-wheel method.

CHOOSING A SYSTEM

The shop cleanup system used is largely up to the teacher and students. Each method requires a cooperative attitude on the part of all. Each student must do the assigned task every day or the system will not work. This is because others must do the job for the negligent students. Jobs of absent students must also be covered by others assigned to the same task. To avoid this problem, several students may be designated as substitutes to do the tasks assigned to others who are absent on any given day.

The following must be provided if a shop cleanup system is to work well:

- assignment of every task to some person
- fair assignments based on desirability of the task and effort required to do it
- rotation of assignments so all students learn all tasks
- cooperation by all parties
- genuine honesty in evaluating performance
- a record of individual performance
- a clean and safe shop by the end of each period.

By working together, agricultural mechanics students can enjoy the benefits of a clean and safe shop. This provides satisfaction, good workmanship, cooperative effort, and personal gain.

SUMMARY

A clean and organized shop is essential to any agricultural mechanics project. Knowing where to find tools, supplies, and materials will save time and be useful in maintaining the proper inventory of tools and materials.

A shop that is cluttered and disorganized will not only be unsafe, but will hinder the proper maintenance of tools and equipment. A disciplined approach to daily cleaning and organizing will save time and effort in the long run and help ensure that accidents are prevented.

STUDENT ACTIVITIES

1. Define the Terms to Know in this unit.
2. List the items in the school agricultural mechanics shop that are used for the storage of:
   - lumber and metal
   - fasteners such as nails and screws
   - flammable liquids
   - waste materials
   - tools
3. Examine the tools and equipment in your school agricultural mechanics shop that are used to clean the shop. Learn to use each item to clean thoroughly.
4. Check all containers used in your agricultural mechanics shop to see if they are of the proper type and properly labeled. Report your findings to the teacher.
5. Help improve the cleanup equipment and facilities in your shop.
6. Volunteer for the shop-cleaning job of your choice.

RELEVANT WEB SITES

http://www.chem.tamu.edu/safety/flammable_haz.html

http://www.ryvac.com

SELF-EVALUATION

A. **Multiple Choice.** Select the best answer.

1. Oily rags should be stored in a
   a. cardboard box
   b. plastic bag
   c. wooden box
   d. closed, metal can
2. A clean, organized shop reduces the chance of
   a. fire
   b. lost tools
   c. damage to projects
   d. all of these
3. Brushes and brooms work better if pushed
   a. in a continuous path
   b. and lifted intermittently
   c. back and forth
   d. in long strokes
4. Sawdust is useful in shop cleanup to
   a. absorb liquids on the floor
   b. reduce dust in the trash container
   c. condition bristles on floor brooms
   d. none of these

5. A recommended material for cleaning grease from the floor is
   a. water
   b. gasoline
   c. Varsol
   d. sawdust

6. The foreperson's job in the cleanup process is
   a. supervision
   b. reward
   c. evaluation
   d. assigning jobs

7. The best item for cleaning nongreasy machines is a/an
   a. rag
   b. brush
   c. air gun
   d. vacuum cleaner

8. The shop-cleaning method that gives the best control over the cleanup process is the
   a. all-pitch-in method
   b. cleanup-wheel method
   c. assignment-sheet method
   d. honor-system method

9. The main advantage of the shop cleanup assignment sheet over the shop cleanup wheel is the
   a. flexibility in assigning students to tasks
   b. ease in reassigning tasks
   c. use of a checklist for evaluations
   d. use of a foreperson for evaluations

10. Rotating shop cleanup duties
    a. enables everyone to learn the various cleaning tasks
    b. promotes fairness in assigning undesirable tasks
    c. involves every student on an equal basis
    d. all of these

B. Completion. Fill in the blanks with the word or words that make the following statements correct.

1. A quick and efficient cleanup procedure is important to the _____ of the students.
2. The key to a clean shop is _____.
3. Any shop cleanup method requires a _____ _____ on the part of all involved.
4. Tools should be mounted on panels over colored outlines of each tool, called _____.
5. In the presence of _____, a steel flammable-materials cabinet automatically closes.
6. Effective cleaning skills cannot be taken for granted; they must be _____.

C. Brief Answers. Briefly answer the following questions.

1. List fifteen signs of a properly cleaned shop.
2. List seven reasons for using a properly organized cleanup procedure.
3. List fifteen tasks involved in shop cleanup.
4. Name two cleaning tools that are used to move trash from the floor to the trash cans.
5. What is the best tool to use for cleaning machines?